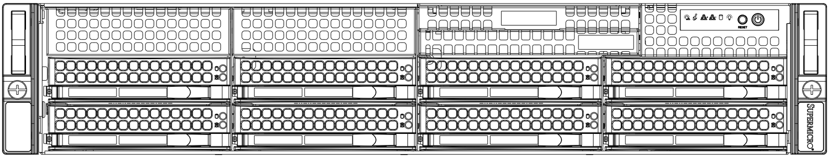
SUPERO®

SC829 CHASSIS
Series


RESET
SUPERMICRO®

SC829TQ-R920LPB SC829TQ-R920UB
SC829BTQ-R920WB

USER'S MANUAL

1.0

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SC829 2U chassis. Installation and maintenance should be performed by experienced technicians only.

Supermicro's SC829 chassis features a unique and highly-optimized design for 2U servers that provides minimal space usage without compromising the interior cooling ability. The SC829 chassis includes eight hot-swappable SAS/SATA hard drive bays, plus two slim peripheral drive bays. It is also equipped with redundant 920W 94%+ high-efficiency (80 PLUS Platnum Level certified) power supplies for superb power savings. The chassis provides optimal features in a 2U form factor for high-end, high-performance applications.

Manual Organization

Chapter 1 Introduction

The first chapter describes the main features of the SC829 chassis and provides contact information for Supermicro.

Chapter 2 System Safety

This chapter lists warnings, precautions, and system safety information. You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed before installing and servicing this chassis.

Chapter 3 Chassis Components

Refer here for details on this chassis model including the fans, bays, airflow shields, and other components.

Chapter 4 System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 5 Chassis Setup and Maintenance

Refer to this chapter for detailed information on this chassis. You should follow the procedures given in this chapter when installing, removing, or reconfiguring your chassis.

Chapter 6 Rack Installation

Refer to this chapter for detailed information on chassis rack installation. You should follow the procedures given in this chapter when installing or removing your chassis from a rack environment.

Appendices

This section lists compatible cables, power supply specifications, and compatible backplanes. Not all compatible backplanes may be listed. Refer to the Supermicro Web site for the latest compatible backplane information at http://www.supermicro.com.

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Chapter 1

Introduction

1-1 Overview

Supermicro's SC829 2U chassis features a unique and highly-optimized design. The chassis is equipped with high efficiency power supply.

1-2 Shipping List

Please visit the following link for the latest shipping lists and part numbers for your particular chassis model visit the Supermicro Web site at www.supermicro.com.

SC829 Chassis				
Model	**CPU**	**HDD**	**I/O Slots**	**Power Supply**
SC829TQ-R920LPB	DP/UP	8x SAS/SATA	7x LP	920W (Platinum)
SC829TQ-R920UP	DP/UP	8x SAS/SATA	4x FH 2x LP	920W (Platinum)
SC829BTQ-R920WB	DP/UP	10x SAS/SATA	4x FH 3x LP	920W (Platinum)

1-3 Chassis Features

The SC829 2U, high-performance chassis includes the following features:

CPU

The SC829 chassis supports a dual-core Xeon processor. Please refer to the motherboard specifications pages on our Web site for updates on supported processors.

Hard Drives

The SC829 chassis features eight drive bays for SAS/SATA hard drives which support SES2. These drives are hot-swappable. Once set up correctly, these drives can be removed without powering down the server.

I/O Expansion slots

Each SC829 chassis model includes either seven low-profile I/O expansion slots or four full-height expansion slots with two low-profile expansion slots.

Peripheral Drives

Each SC829 chassis includes two slim peripheral drive bays for optional slim optical drive and USB COM tray These drives allow you to quickly install or save data.

Other Features

Other onboard features are included to promote system health. These include various three cooling fans, a convenient power on/off button, a reset button, and six LED indicators.

Contacting Supermicro

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1-5 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

Whenever possible, repack the chassis in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the chassis securely, using packaging material to surround the chassis so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Chapter 2

System Safety

2-1 Overview

This chapter provides basic safety information to protect yourself from harm and the SC829 from damage. This chapter assumes that you are an experienced technician, familiar with common concepts and terminology.

2-2 Warnings and Precautions

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage, file a damage claim with carrier who delivered your system.

Decide on a suitable location for the rack unit that will hold that chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated.

The SC829 chassis includes redundant power supplies and requires two grounded outlets.

2-3 Preparing for Setup

The SC829 chassis includes a set of rail assemblies, including mounting brackets and mounting screws you will need to install the systems into the rack. Please read this manual in its entirety before you begin the installation procedure.

2-4 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SC829 from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room’s emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high-voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and the DVD-ROM and peripheral drives (not necessary for hot swappable drives). When disconnecting power, you should first power down the system with the operating system and then unplug the power cords from all the power supply modules in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power, if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cord must include a grounding plug and must be plugged into grounded electrical outlets.

- Serverboard battery: CAUTION - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer’s instructions.

- Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

- DVD-ROM laser: CAUTION - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

2-5 General Safety Precautions

- Keep the area around the chassis clean and free of clutter.
- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

2-6 System Safety

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

- When handling chips or modules, avoid touching their pins.

- Put the serverboard and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Chapter 3

Chassis Components

3-1 Overview

This chapter describes the most common components included with your chassis. Some components listed may not be included or may not be compatible with your particular chassis model. For more information, see the installation instructions detailed later in this manual.

3-2 Components

Chassis

The SC829 chassis includes eight hard drive bays, and two slim peripheral drive bays which support one slim DVD-ROM drive (optional) and a panel with one com port and two USB ports (optional). Hard drives must be purchased separately. For the latest shipping lists, visit our Web site at: http://www.supermicro.com. This chassis supports a 2U backplane, four fans and redundant power supplies.

Backplane

Each SC829 chassis comes with a 2U SAS/SATA backplane w/ enclosure management capabilitites. For more information regarding compatible backplanes, view the appendices found at the end of this manual. In addition, visit our Web site for the latest information: http://www.supermicro.com.

Fans

The SC829 chassis supports four system fans. System fans for SC829 chassis are powered from the motherboard. These fans are 2U high and are powered by 3-pin connectors. Optionally, three extra fans can be provided to support cooling redundancy for E-ATX motherboards.

Mounting Rails

The SC829 can be placed in a rack for secure storage and use. To set up your rack, follow the step-by-step instructions included in this manual.

Power Supply

Each SC829 chassis model includes redundant high-efficiency power supplies rated at 920 Watts. In the unlikely event of a power supply failure, replacement is simple and can be accomplished without tools.

Air Shroud

Air shrouds are shields, usually plastic, which conduct the airflow directly to where it is needed. Always use the air shroud included with your chassis.

3-3 Where to get Replacement Components

Although not frequently, you may need replacement parts for your system. To ensure the highest level of professional service and technical support, we strongly recommend purchasing exclusively from our Supermicro Authorized Distributors/System Integrators/Resellers. A list of Supermicro Authorized Distributors/System Integrators/Reseller can be found at: http://www.supermicro.com. Click the Where to Buy link.

Chapter 4

System Interface

4-1 Overview

There are several LEDs on the control panel and the drive carriers to keep you constantly informed of the over-all status of the system, as well as the activity and health of specific components. Most SC829 models have two buttons on the chassis control panel: a reset button and a power on/off button. This chapter explains the meanings of all LED indicators and the appropriate responses you may need to take.

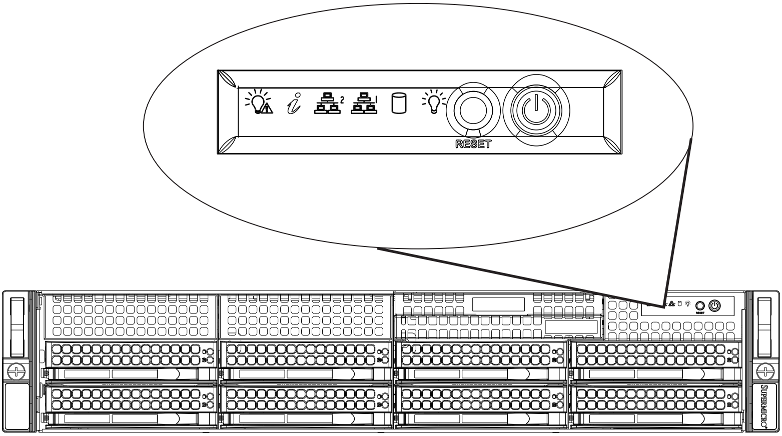
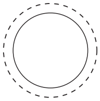


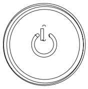
Figure 4-1: Front Control Panel

4-2 Control Panel Buttons

There are two push-buttons located on the front of the chassis. These are (in order from left to right) a reset button and a power on/off button.



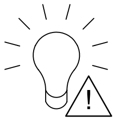
Reset: The reset button is used to reboot the system.



Power: The main on/off button is used to apply or remove power from the power supply to the server. Turning off system power with this button removes the main power but keeps standby power supplied to the system. Therefore, you must unplug the power cord from the system before servicing.

4-3 Control Panel LEDs

The control panel located on the front of the SC829 chassis has six LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



- **Power Failure:** When this LED flashes, it indicates a power failure in the power supply.

Informational LED:

Continuously on and blue: UID function has been activated.
Flashing red: Fan failure.
Continuously on and red: Overheat condition. This may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly. This LED will remain flashing or on as long as the overheat or fan failure condition exists.

NIC2: Indicates network activity on Gigabit LAN2 when flashing.

NIC1: Indicates network activity on Gigabit LAN1 when flashing.

HDD: Indicates SAS/SATA drive and/or DVD-ROM drive activity when flashing.

Power: Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

4-4 Drive Carrier LEDs

Your chassis uses SAS/SATA drives.

SAS/SATA Drives

Each SAS/SATA drive carrier has two LEDs.

Green LED:

Each SAS/SATA drive carrier has a green LED. When illuminated, this green LED (on the front of the SATA drive carrier) indicates drive activity. A connection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed.

Green LED	
Status	**Description**
Continuously on	SATA drive is being used continuously
Continuously off	SAS drive is being used continuously
Flashing on and off	SAS/SATA drive is being accessed

Red: The red LED indicates a SAS/SATA drive failure. If one of the SAS/SATA drives fail, you should be notified by your system management software.

Red LED	
Status	**Description**
Continuously on	SATA drive is being used continuously
Flashing on and off	SAS drive is being rebuilt with RAID functionality after a drive has been replaced.

Chapter 5

Chassis Setup and Maintenance

5-1 Overview

This chapter covers the steps required to install components and perform maintenance on the chassis. The only tool you will need to install components and perform maintenance is a Phillips screwdriver. Print this page to use as a reference while setting up your chassis.

5-2 Installation and General Maintnenance

Installation

- Removing the Chassis Cover
- Installing Hard Drives
- DVD ROM Replacement or Installation
- Installing the Motherboard (standoffs, expansion card and PCI slot setup)
- Installing the Air Shroud

General Maintenance

- System Fans
- Replacing the Power Supply
- Optional Front Bezel

Review the warnings and precautions listed in the manual before setting up or servicing this chassis. These include information in Chapter 2: System Safety and the warning/precautions listed in the setup instructions.

5-3 Removing the Chassis Cover

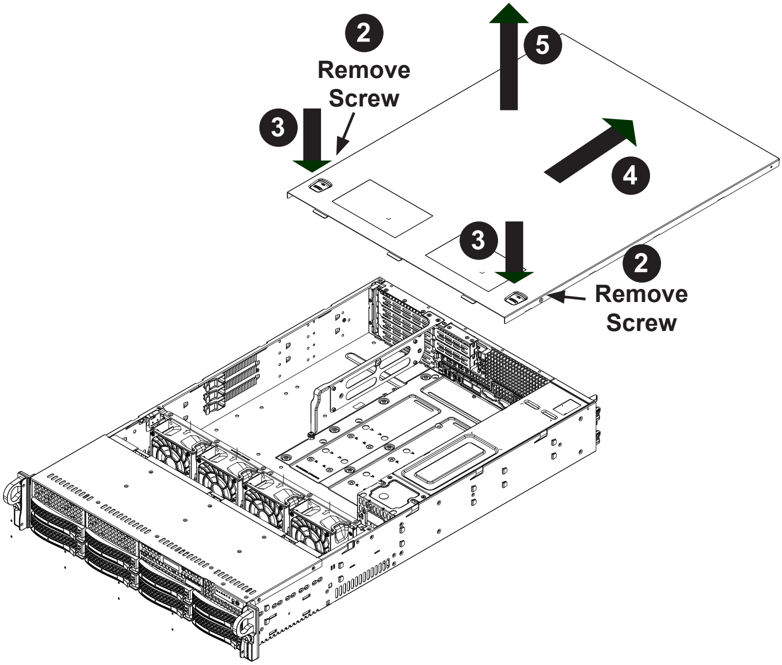


Figure 5-1: Removing the Chassis Cover

Removing the Chassis Cover

1. Power down the server and remove the power cord from the power supply.

2. Remove the two screws on each side of the cover, which secure the cover to the chassis.

3. Press the release tabs to remove the cover from the locked position. Press both tabs at the same time.

4. Once the top cover is released from the locked position, slide the cover toward the rear of the chassis.

5. Lift the cover off the chassis.

Warning: Except for short periods of time, do NOT operate the server without the cover in place. The chassis cover must be in place to allow proper airflow and prevent overheating.

5-4 Installing Hard Drives

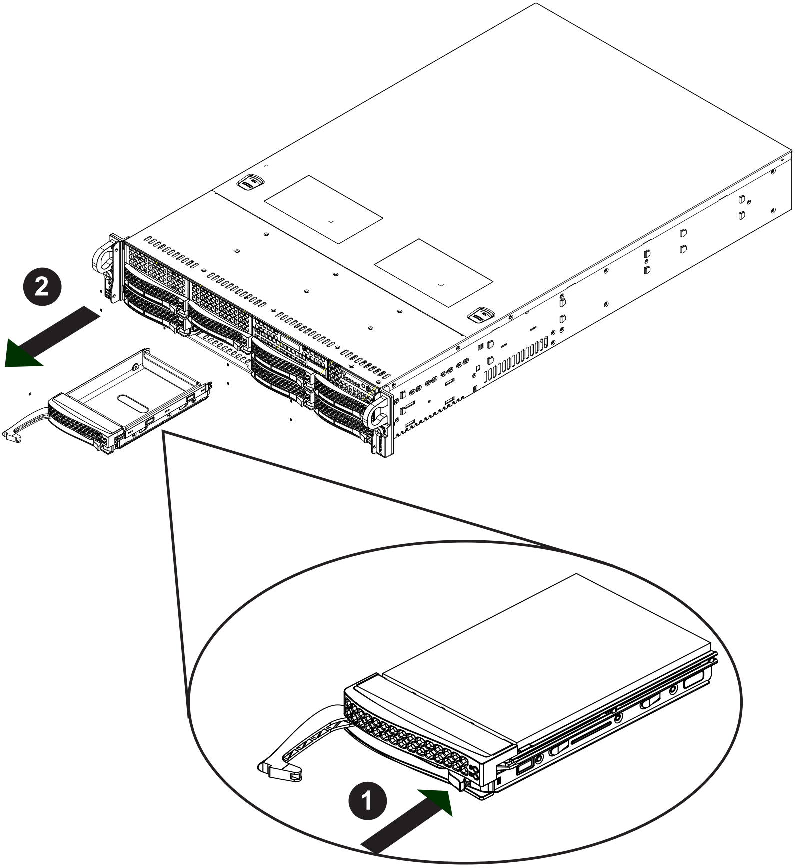


Figure 5-2: Removing Hard Drive

Removing Hard Drive Carriers from the Chassis

1. Press the release button on the drive carrier. This extends the drive carrier handle.

2. Use the handle to pull the drive out of the chassis.

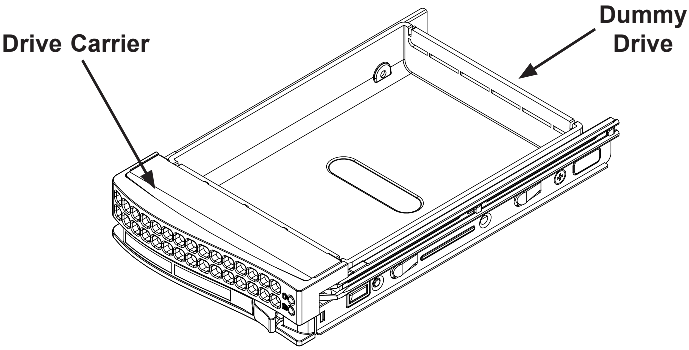


Figure 5-3: Chassis Drive Carrier

The drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drive bays.

Warning: Except for short periods of time (swapping hard drives), do not operate the server with the hard drives removed from the bays.

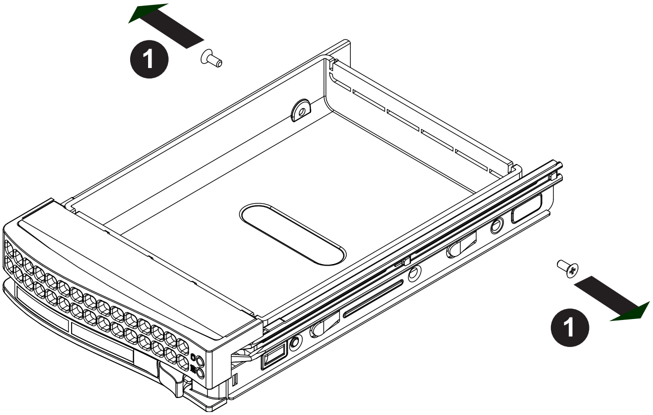


Figure 5-4: Removing Dummy Drive from Carrier

Installing a Hard Drive to the Hard Drive Carrier

1. Remove the screws securing the dummy drive to the carrier.

2. Remove the dummy drive from the carrier.

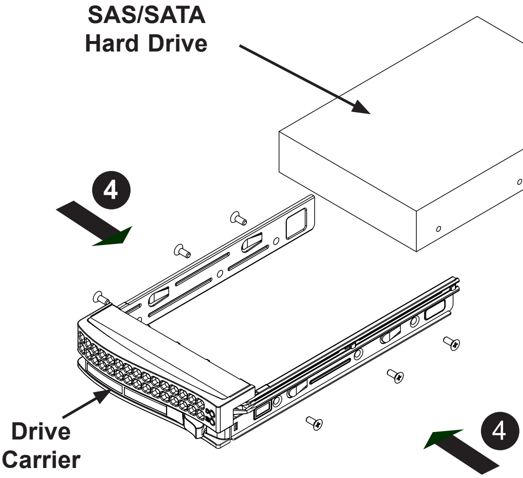


Figure 5-5: Removing the Hard Drive

3. Install a new drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.

4. Secure the hard drive by tightening all six screws.

5. Replace the drive carrier into the chassis bay, making sure that the drive carrier handle is completely closed.

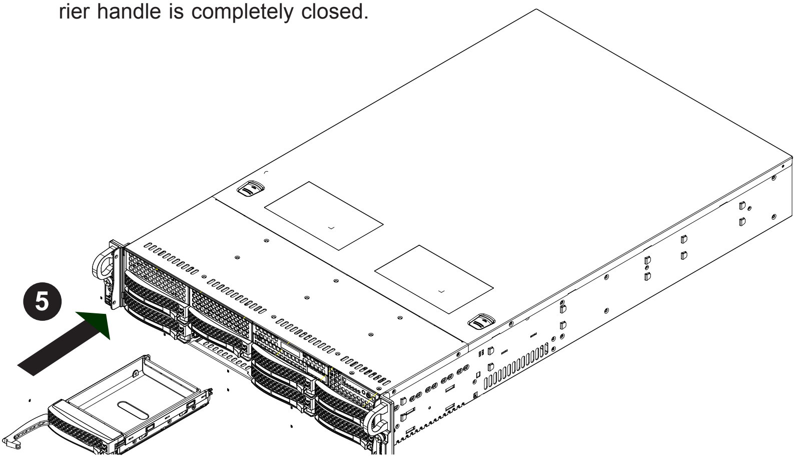


Figure 5-6: Installing the Hard Drive

Warning! Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com

Removing the Dummy Drive or Hard Disk Drive

1. Power down the server, remove the power cord from the power supply and remove the chassis cover.

2. Press the release tab.

3. Push against the back of the dummy drive, sliding the dummy drive and slot cover forward, out through the front of the chassis.

4. Insert the drive into rear of the open slot and connect the wiring.

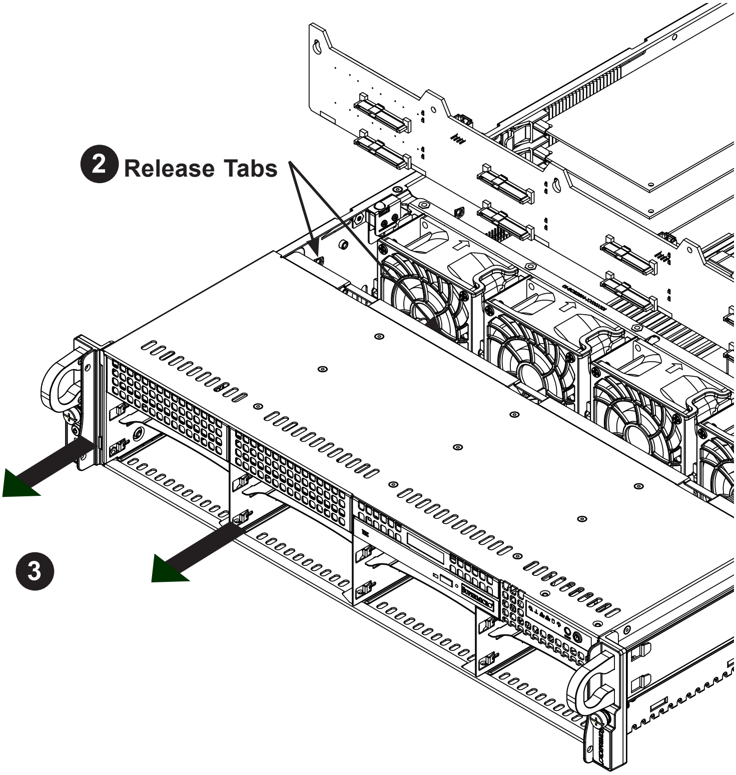


Figure 5-7: Removing the Dummy Drive and Slot Cover

5-6 DVD-ROM Replacement or Installation

Most SC829 chassis models include one DVD-ROM which is usually pre-installed.

Installing or Replacing a DVD-ROM Drive

1. Power down the server, remove the power cord from the power supply and remove the chassis cover. If necessary, remove the server from the rack.

2. Remove the chassis cover.

3. Unplug the drives power and data cables from the motherboard and/or backplane.

4. **If you are adding a new DVD-ROM drive:** Remove the mini-bezel (grate) from the drive bay. The bezel can be removed by pulling out the hard drive beneath the DVD-ROM drive bay, then pulling the mini-bezel forward.
   If you are replacing a drive: Locate the locking tab at the rear (left hand side when viewed from the front) of the DVD-ROM drive. Push the tab toward the drive and push the drive unit out the front of the chassis.

5. Insert the new drive unit in the slot until the tab locks in place.

6. Reconnect the data and power cables.

7. Replace the chassis cover (replace the server in the rack, if necessary) and power up the system.

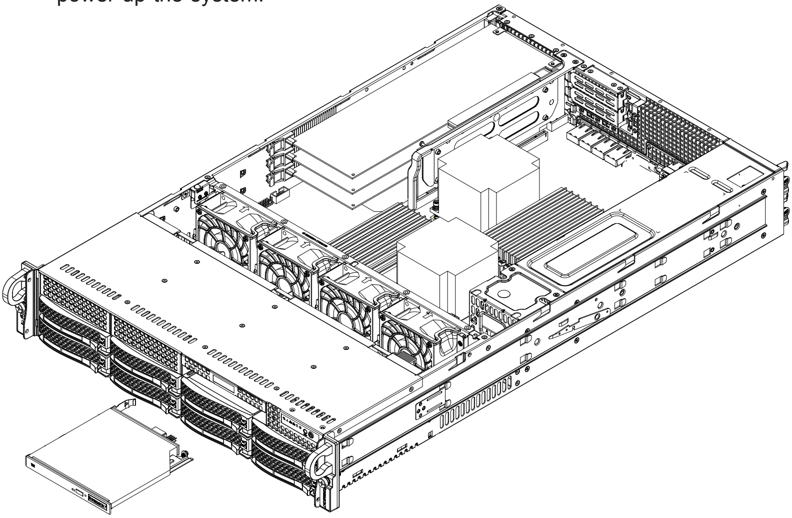


Figure 5-8: Installing or Replacing a DVD-ROM Drive

Replacing the DVD-ROM and Front Panel

SC829 chassis models include a slim DVD-ROM, and front port panel. Use the instructions in this section in the unlikely event that you must replace any of these components.

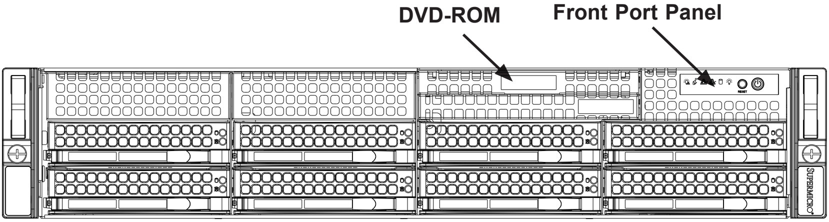


Figure 5-9: Install the DVD-ROM and Front Panel

5-7 Installing the Motherboard

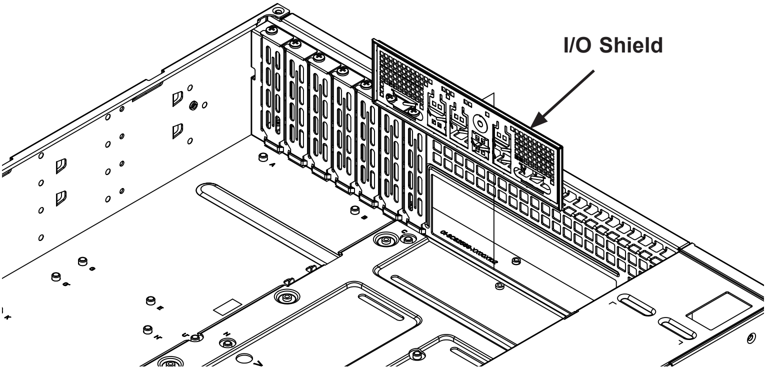


Figure 5-10: I/O Shield Placement

I/O Shield

The I/O shield holds the motherboard ports in place. Install the I/O shield before you install the motherboard.

Installing the I/O Shield

Installing the I/O Shield

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, and precautions.

2. Power down the server, remove the power cord from the power supply and remove the chassis cover..

3. With the illustrations facing the outside of the chassis, place the shield into the space provided.

4. Once installed, the motherboard will hold the I/O shield in place.

Permanent and Optional Standoffs

Standoffs prevent short circuits by creating space between the motherboard and the chassis surface. The SC829 chassis includes permanent standoffs in locations used by most motherboards. These standoffs accept the rounded Phillips head screws included in the SC829 accessories packaging. Compare the mounting holes in the motherboard to the holes in the chassis and then add or remove standoffs as needed.

Some motherboards require additional screws for heatsinks, general components and/or non-standard security. Optional standoffs are included to these motherboards. To use an optional standoff, you must place the hexagonal screw through the bottom the chassis and secure the screw with the hexagon nut (rounded side up).

Installing the Motherboard

1. Review the documentation that came with your motherboard. Become familiar with component placement, requirements, precautions, and cable connections.

2. Power down the server, disconnect the power cord from the power supply and open the chassis cover.

3. As required by your motherboard, install standoffs in any areas that do not have a permanent standoff. To do this:
   A. Place a hexagonal standoff screw through the bottom the chassis.
   B. Secure the screw with the hexagon nut (rounded side up).

4. Lay the motherboard on the chassis aligning the permanent and optional standoffs

5. Secure the motherboard to the chassis using the rounded, Phillips head screws. Do not exceed eight pounds of torque when tightening down the motherboard.

6. Secure the CPU(s), heatsinks, and other components to the motherboard as described in the motherboard documentation.

7. Connect the cables between the motherboard, backplane, chassis, front panel, and power supply, as needed. Also, the fans may be temporarily removed to allow access to the backplane ports.

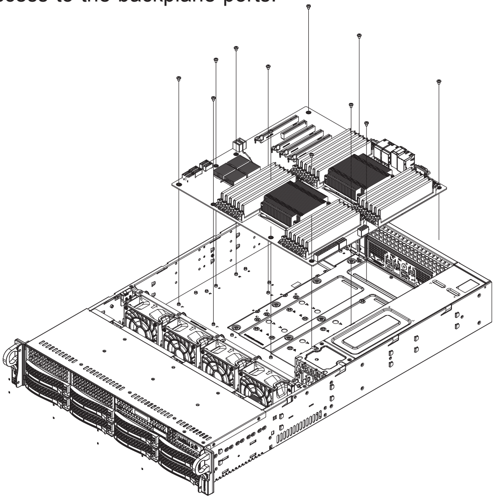


Figure 5-11: Chassis Standoffs

PCI Slot Setup

SC829: chassis include PCI/PCIE slots for expansion cards. The number of cards you can use depends on your chassis model.

SC829TQ-R920LPB: Provides seven low-profile PCI/PCIe card slots.

SC829TQ-R920UB: Provides four full-height, full-length and two low-profile PCI/PCIe card slots through a user-defined universal expansion card.

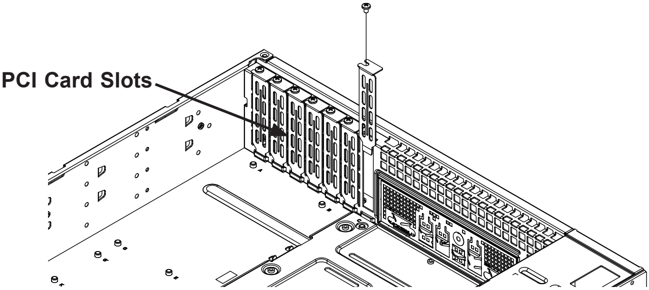


Figure 5-12: SC829TQ-920LPB Model

PCI Slot Setup for SC829TQ-R920UB (Universal Output)

SC829TQ-R920UB chassis accepts a slightly smaller "L" shaped motherboard to allow for a universal expansion card. This universal output card allows the system to accept SAS, SCSI, IB, Ethernet, and other types of connections.

The SC829TQ-R920UB chassis setup is similar to the SC829TQ-R920LPB chassis with two differences:

A. The SC829TQ-R920UB chassis accepts four full-length, full-height expansion cards and two low-profile expansion cards. The fourth slot (bottom slot) is used for the UIO card.

B. The SC829TQ-R920UB chassis includes a bracket that extends from the fan row to the back of the chassis. This bracket provides support for the riser card.

Installing a Universal Input/Output Card in the SC829TQ-R920UB chassis:

1. Power down the server, disconnect the power cord from the power supply, lay the chassis on a flat surface, and open the chassis cover.
2. Connect the universal input/output to the motherboard using the slots provided on the motherboard and the back panel.
3. Secure the card to the chassis using the four screws provided with the chassis packaging.

The SC829TQ-R920UB chassis has four full-height/full-length PCI slots and two low-profile slots.

Installing Expansion Cards in the SC829TQ-R920UB Chassis

1. Power down the server, disconnect the power cord from the power supply, lay the chassis on a flat surface, and open the chassis cover.
2. If you are using a universal input/output card, make sure it is installed before continuing.
3. If you installing low-profile expansion cards, remove the chassis air shroud.
4. Secure the card to the chassis using the four screws provided with the chassis packaging.

PCI/PCIE Slot Setup for SC829BTQ-R920WB (Wide I/O)

SC829BTQ-R920WB chassis accepts a slightly smaller "L" shaped motherboard to allow for a universal expansion card. This universal output card allows the system to accept SAS, IB, Ethernet, and other types of connections.

The SC829BTQ-R920WB chassis setup is similar to the SC829TQ-R920LPB chassis with two differences:

A. The SC829BTQ-R920WB chassis accepts four full-length, full-height expansion cards and two low-profile expansion cards. The fourth slot (bottom slot) is used for the WIO card.

B. The SC829BTQ-R920WB chassis includes a bracket that extends from the fan row to the back of the chassis. This bracket provides support for the riser card.

Installing a Wide Input/Output Card in the SC829BTQ-R920WB chassis:

1. Power-down the server, disconnect the power cord from the power supply, lay the chassis on a flat surface, and open the chassis cover.

2. Connect the wide input/output to the motherboard using the slots provided on the motherboard and the back panel.

3. Secure the card to the chassis using the four screws provided with the chassis packaging.

The SC829BTQ-R920WB chassis has four full-height/full-length PCI/PCIE slots and two low-profile slots.

Installing Expansion Cards in the SC829BTQ-R920WB Chassis

1. Power down the server, disconnect the power cord from the power supply, lay the chassis on a flat surface, and open the chassis cover.

2. If you are using a universal input/output card, make sure it is installed before continuing.

3. If you installing low-profile expansion cards, remove the chassis air shroud.

4. Secure the card to the chassis using the four screws provided with the chassis packaging.

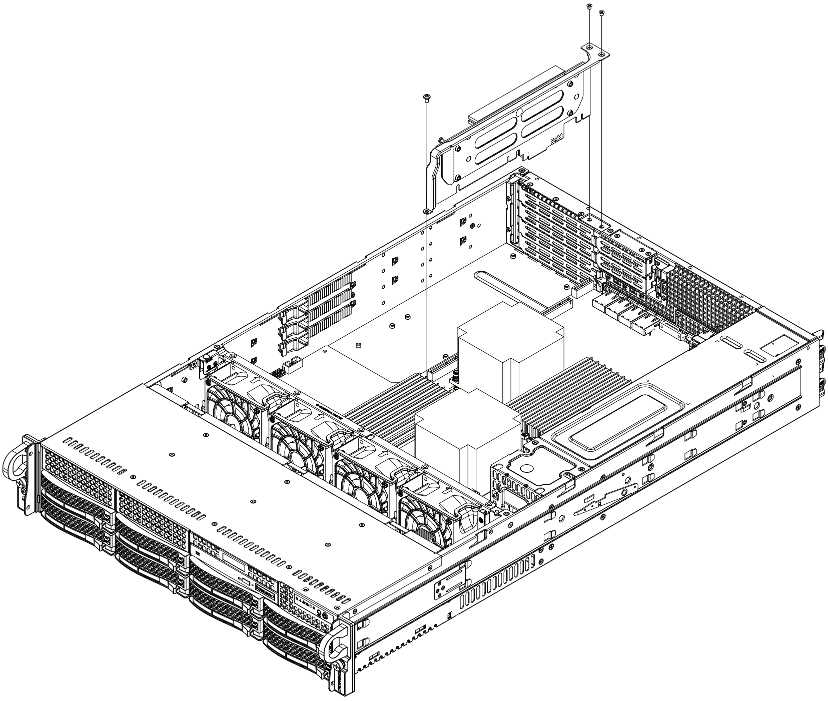


Figure 5-13: Installing a Riser Card

Installing a Riser Card in SC829TQ-R920UB and SC829BTQ-R920WB Models

1. Power down the server, disconnect the power cord from the power supply and open the chassis cover

2. Remove the chassis air shroud.

3. Insert the riser card into the far right chassis expansion slot (see Figure 5-13).

4. Secure the card to the chassis using the three screws provided with the chassis packaging.

5. Place the air shroud back in the chassis.

5-8 Installing the Air Shroud

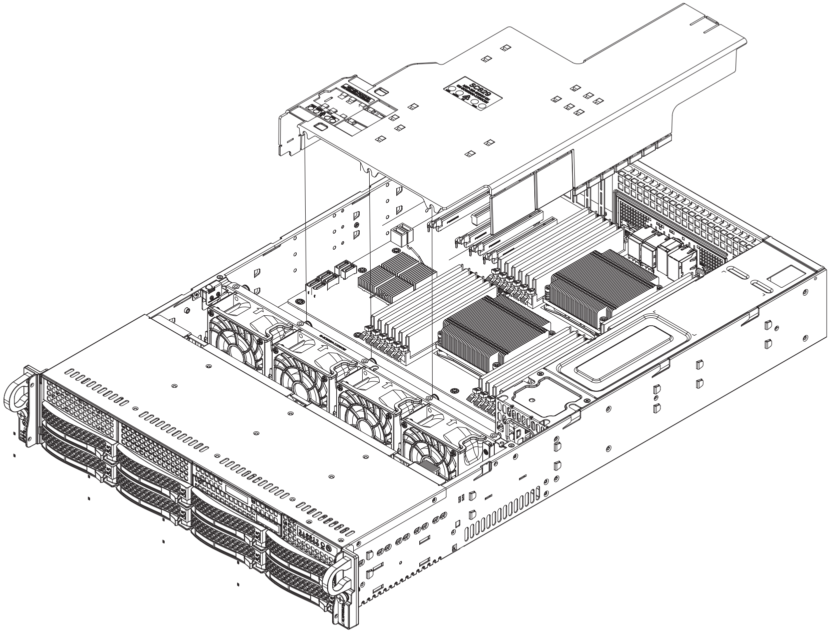


Figure 5-14: Installing the Air Shroud

Air shrouds concentrate airflow to maximize fan efficiency. The SC829 chassis air shroud does not require screws to set up.

Installing the Air Shroud

1. Power down the server, remove the power cord from the power supply and remove the chassis cover.

2. Confirm that your air shroud matches your chassis model. Each shroud is labeled SC829 (part number MCP-310-29002-0N).

3. Place air shroud in the chassis. The air shroud fits behind the two fans closest to the power supply.

For ordering information, visit the Supermicro website at www.supermicro.com and click on the Where to Buy link.

Checking the Server's Airflow

Checking the Airflow

1. Make sure there are no objects to obstruct airflow in and out of the server. In addition, if you are using a front bezel, make sure the bezel's filter is replaced periodically.

2. Do not operate the server without drives or drive carriers in the drive bays. Use only recommended server parts.

3. Make sure no wires or foreign objects obstruct air flow through the chassis. Pull all excess cabling out of the airflow path or use shorter cables.

The control panel LEDs inform you of system status. See “Chapter 3: System Interface” for details on the LEDs and the control panel buttons.

Installation Complete

In most cases, the chassis power supply and fans are pre-installed. If you need to install fans continue to the Systems Fan section of this chapter. If the chassis will be installed into a rack, see the next chapter for rack installation instructions.

5-9 System Fans

Three heavy-duty fans provide cooling for the chassis. These fans circulate air through the chassis as a means of lowering the internal temperature of the chassis.

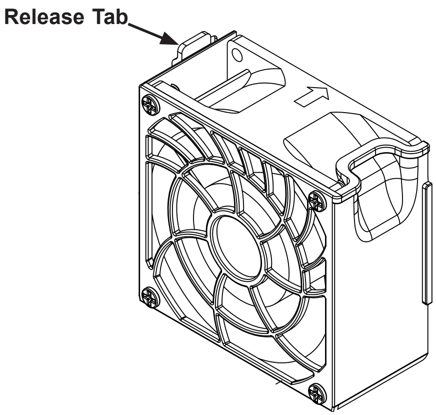


Figure 5-15: System Fan

Replacing a System Fan

1. If necessary, open the chassis while the power is running to determine which fan has failed. (Never run the server for an extended period of time with the chassis open.)

2. Turn off the power to the system and unplug the system from the outlet.

3. Remove the failed fan's power cord from the serverboard.

4. Press the fan release tab to lift the failed fan from the chassis and pull it completely from the chassis.

5. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.

6. Power up the system and check that the fan is working properly before replacing the chassis cover.

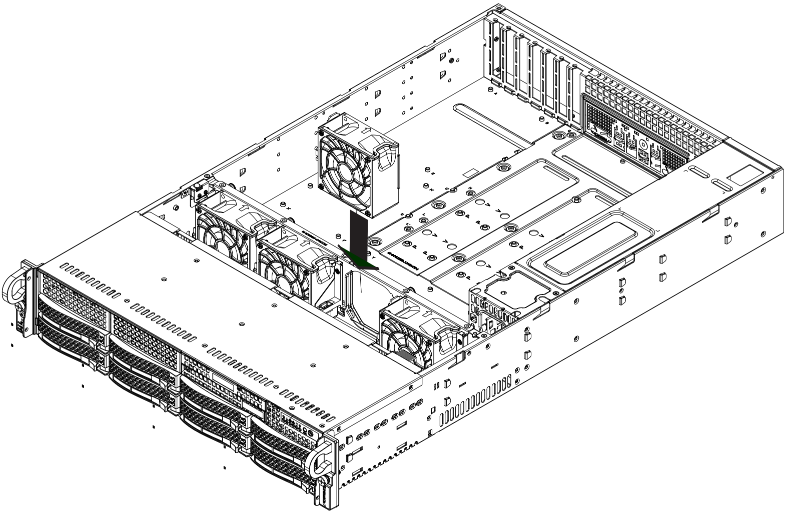


Figure 5-16: Placing the System Fan

5-10 Power Supply

The SC829 chassis has a 920 Watt power supply. This power supply is auto-switching capable. This enables it to automatically sense and operate at a 100v to 240v input voltage. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

Power Supply Failure

SC829 chassis models have two (redundant) power supplies. In the unlikely event that the power supply unit fails, the power supply can be replaced without powering-down the system. Replacement units may be ordered directly from Supermicro (see contact information in the Preface).

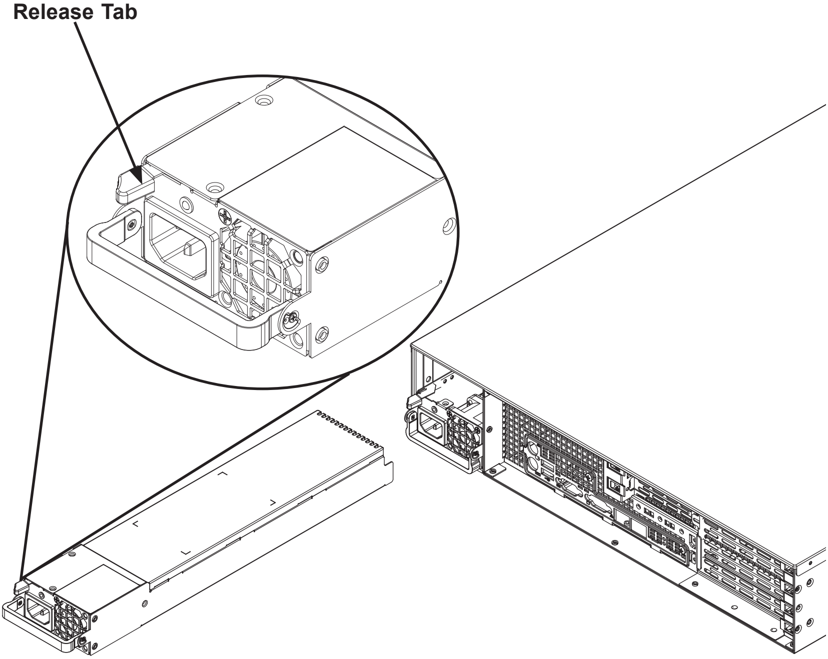


Figure 5-17: Removing the Power Supply

Replacing the Power Supply

1. Your chassis includes a redundant power supply with two power modules. You can leave the server running and remove only one power supply. If your server has only one power supply, you must power-down the server and unplug the power cord before replacing the power supply.

2. Push the release tab (on the back of the power supply) as illustrated.

3. Pull the power supply out using the handle provided.

4. Replace the failed power module with the same model.

5. Push the new power supply module into the power bay until it clicks into the locked position.

6. Plug the AC power cord into the new power module.

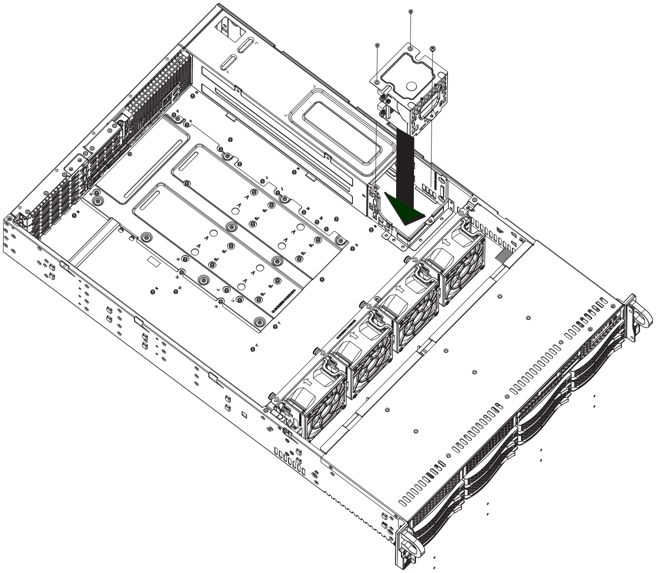


Figure 5-18: Replacing the Power Distributor

5-11 Replacing the Power Distributor

Redundant server chassis that are 2U or greater require a power distributor. The power distributor provides failover and power supply redundancy. In the unlikely event you must replace the power distributor, see the following instructions

Replacing the Power Distributor

1. Power down the server and remove the power cord from the power supply.

2. Remove all cable connections to the power supply from the motherboard, backplane, and other components. Also, remove both power supplies.

3. Locate the power distributor between the power supply and the fan row.

4. Remove the three screws securing the power supply.

5. Gently pull the power distributor from the chassis. Guide all the cables through the power distributor housing.

6. Slide the new power distributor module into the power distributor housing. Make certain that you slide the cables through the bottom of the housing.

7. Reconnect all the power cables, replace the power supply, and reconnect the power cord.

5-12 Replacing or Installing the Front Port Panel

Replace or Install the Front Port Panel

1. Power down the system, unplug the power cord from the power supply and remove the chassis cover.
2. Disconnect the power and data cables from the front port panel to other chassis components including the motherboard and backplane.
3. Remove the old port panel by depressing the release tab, then pulling the unit out of the chassis.
4. Insert the new front port panel unit in the slot until the tab locks into place.
5. Connect the data and power cables to the backplane and motherboard.
6. For more information, see the backplane appendix in this manual.

5-13 Optional Front Bezel

The SC829 chassis supports an optional full-face locking front bezel for added security. The front bezel is not included with the SC829 chassis, but can be ordered seperately by visiting the Supermicro Web site at www.supermicro.com, clicking on the Where to Buy link and referencing part number MCP-210-82601-0B.

Notes

Chapter 6

Rack Installation

6-1 Overview

This chapter provides a quick setup to install the SC829 chassis into a rack. Following these steps in the order given should enable you to have the system installed within a minimal amount of time..

6-2 Unpacking the System

You should inspect the box the chassis was shipped in and note if it was damaged in any way. If the chassis itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold your chassis. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the next section.

6-3 Preparing for Setup

The box your chassis was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).

- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

Warnings and Precautions!

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack.
- In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

General Server Precautions

- Review the electrical and general safety precautions that came with the components you are adding to your chassis.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot-plug hard drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer’s maximum rated ambient temperature (Tmra).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

6-4 Rack Mounting Instructions

This section provides information on installing the SC829 chassis into a rack unit with the quick-release rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

NOTE: This rail will fit a rack between 26" and 33.5" deep.

Separating the Sections of the Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.

Separating the Inner and Outer Rails

1. Locate the rail assembly in the chassis packaging.
2. Extend the rail assembly by pulling it outward.
3. Press the quick-release tab.
4. Separate the inner rail extension from the outer rail assembly.

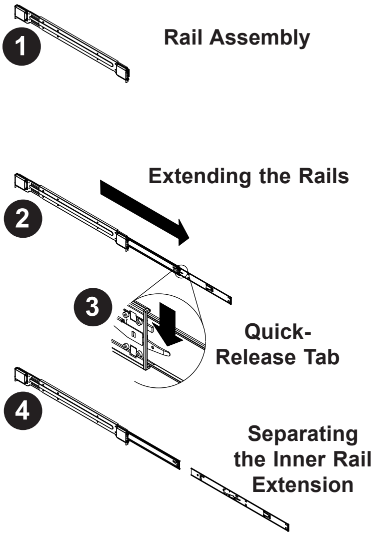


Figure 6-1: Separating the Rack Rails

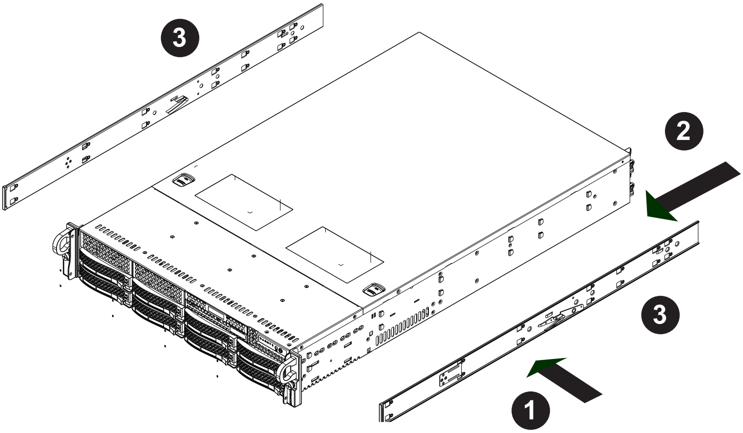


Figure 6-2: Installing the Inner Rail Extensions

Installing the Inner Rail Extension

The SC829 chassis includes a set of inner rails in two sections: inner rails and inner rail extensions. The inner rails are pre-attached to the chassis, and do not interfere with normal use of the chassis if you decide not to use a server rack. The inner rail extension is attached to the inner rail to mount the chassis in the rack.

Installing the Inner Rails

1. Place the inner rail extensions on the side of the chassis aligning the hooks of the chassis with the rail extension holes. Make sure the extension faces "outward" just like the pre-attached inner rail.

2. Slide the extension toward the front of the chassis.

3. Optional: Secure the chassis with two screws as illustrated. Repeat steps for the other inner rail extension.

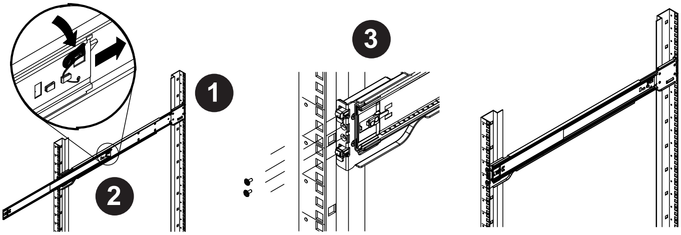


Figure 6-3: Assembling the Outer Rails

Outer Rack Rails

Outer rails attach to the rack and hold the chassis in place. The outer rails for the SC829 chassis extend between 30 inches and 33 inches.

Installing the Outer Rails to the Rack

1. Secure the back end of the outer rail to the rack, using the screws provided.
2. Press the button where the two outer rails are joined to retract the smaller outer rail.
3. Hang the hooks of the rails onto the rack holes and if desired, use screws to secure the front of the outer rail onto the rack.
4. Repeat steps 1-3 for the remaining outer rail.

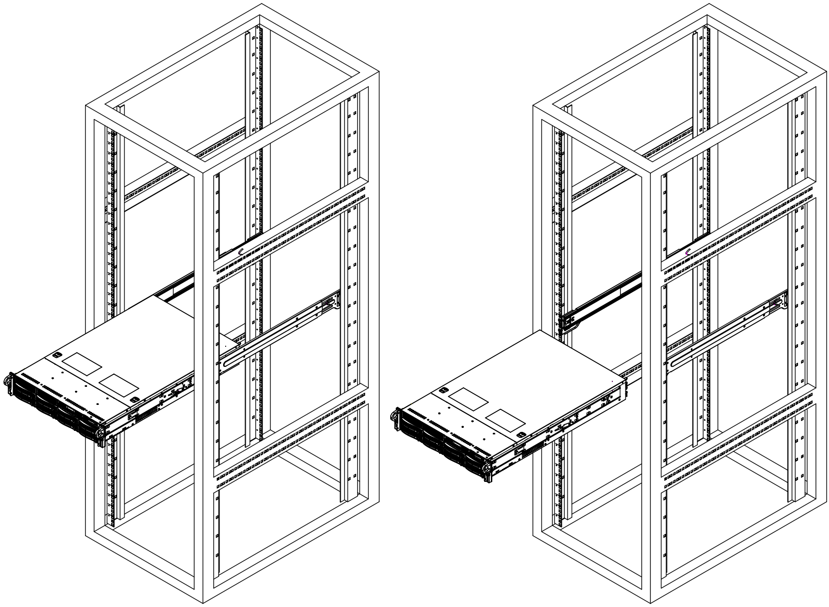


Figure 6-4: Installing the Chassis into the Rack

Installing the Chassis into a Rack

1. Extend the outer rails as illustrated above.

2. Align the inner rails of the chassis with the outer rails on the rack.

3. Slide the inner rails into the outer rails, keeping the pressure even on both sides. When the chassis has been pushed completely into the rack, it should click into the locked position.

4. Optional screws may be used to secure the to hold the front of the chassis to the rack.

Notes

Appendix A

SC829 Chassis Cables

A-1 Overview

This appendix lists supported cables for your chassis system. It only includes the most commonly used components and configurations. For more compatible cables, refer to the manufacturer of the motherboard you are using and our Web site at: www.supermicro.com.

A-2 Cables Included with SC829TQ Chassis

SC829TQ-R920LPB, SC829TQ-R920UB, SC829TQ-R920WB

Part #	Type	Length	Description
CBL-0071	Control-Cable	30"	16-pin to 16-pin round ribbon cable
CBL-0157L	Cable	9"	8-pin to 8-pin ribbon cable for SGPIO, PB free
CBL-0180L-01	SATA	various	Set for four SATA cables. Length varied to minimize airflow interference.
CBL-0044L (Optional)	SATA	61 cm (24 inches)	Optional SATA cable
CBL-0082L (Optional)	SATA Power		Y-split SATA power adapter
CBL-0296L (Optional)	Fan	9"	Fan extension cord

A-3 Compatible Cables

These cables are compatible with the SC829 chassis.

Alternate SAS/SATA Cables

Some compatible motherboards have different connectors. If your motherboard has only one SAS connector that the SAS/SATA cables must share, use one of the following cables. These cables must be purchased separately.

Cable Name: SAS Cable **Quantity:** 1

Part #: CBL-0175L
Alt. Name: "Big Four"

Description: This cable has one SFF-8484 (32-pin) connector on one end and four SAS connectors (seven pins on each connector) at the other. This cable connects from the host (motherboard or other controller) to the backplane SAS hard drive port.

Cable Name: SAS Cable **Quantity:** 1

Part #: CBL-0116
Alt. Name: iPass or "Small Four"

Description: This cable has one iPass (SFF-8087/Mini-SAS) connector (36-pin) at one end and four SAS connectors on the other end. This cable connects from the host (motherboard or other controller) to the backplane SAS hard drive port.

Extending Power Cables

Although Supermicro chassis are designed to be efficient and cost-effective, some compatible motherboards have power connectors located in different areas.

To use these motherboards you may have to extend the power cables to the mother boards. To do this, use the following chart as a guide.

Power Cable Extenders		
Number of Pins	**Cable Part #**	**Length**
24-pin	CBL-0042	7.9”(20 cm)
20-pin	CBL-0059	7.9”(20 cm)
8-pin	CBL-0062	7.9”(20 cm)
4-pin	CBL-0060	7.9”(20 cm)

Front Panel to the Motherboard

The SC829 chassis includes a cable to connect the chassis front panel to the motherboard. If your motherboard uses a different connector, use the following list to find a compatible cable.

Front Panel to Motherboard Cable (Ribbon Cable)		
Number of Pins (Front Panel)	**Number of Pins (Motherboard**	**Cable Part #**
16-pin	16-pin	CBL-0049
16-pin	20-pin	CBL-0048
20-pin	20-pin	CBL-0047
16-pin	various*	CBL-0068
20-pin	various*	CBL-0067

*Split cables: Use these cable if your motherboard requires several different connections from the front panel.

Notes

Appendix B

SC829 Power Supply Specifications

This appendix lists power supply specifications for your chassis system.

SC829 Series	
	920W (Redundant)
MFR Part #	PWS-920P-1R
AC Input	100-240 V, 50-60 Hz, 11-4.5 Amp
DC Output	4 Amp @ +5V standby, 75 Amp @ +12V
With Power Distributor	+5V: 50 Amps
	+3.3V: 30 Amps
	-12V: 0.6 Amps

Notes

Appendix C

SAS-825TQ Backplane Specifications

To avoid personal injury and property damage, carefully follow all the safety steps listed below when accessing your system or handling the components.

C-1 ESD Safety Guidelines

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to your system, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing a component from the antistatic bag.
- Handle the backplane by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the card and peripherals back into their antistatic bags when not in use.

C-2 General Safety Guidelines

- Always disconnect power cables before installing or removing any components from the computer, including the SAS-825TQ backplane.
- Disconnect the power cable before installing or removing any cables from the SAS-825TQ backplane.
- Make sure that the SAS-825TQ backplane is securely and properly installed on the motherboard to prevent damage to the system due to power shortage.

C-3 An Important Note to Users

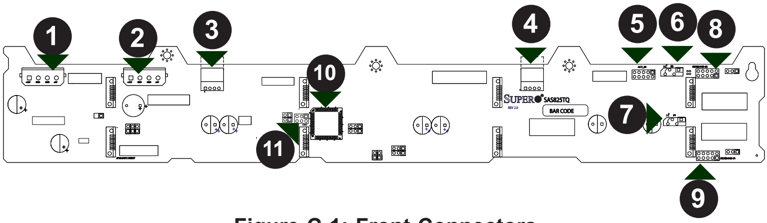
- All images and layouts shown in this user's guide are based upon the latest PCB Revision available at the time of publishing. The card you have received may or may not look exactly the same as the graphics shown in this manual.

C-4 Introduction to the SAS-825TQ Backplane

The SAS-825TQ backplane has been designed to utilize the most up-to-date technology available, providing your system with reliable, high-quality performance.

This manual reflects SAS-825TQ Revision 2.0, the most current release available at the time of publication. Always refer to the Supermicro Web site at www.supermicro.com for the latest updates, compatible parts and supported configurations.

C-5 Front Connectors and SAS Ports


1
2
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SUPERO SAS825TQ
REV 2.0
BAR CODE

Figure C-1: Front Connectors

Front Connectors

1. 4-pin power connector: JP13
2. 4-pin power connector: JP10
3. CD-ROM/floppy connector: JP18
4. CD-ROM/floppy connector: JP17
5. Activity in LED header: JP26
6. I²C Connector #2: JP45
7. I²C Connector #1: JP44
8. Sideband Connector #2: JP52
9. Sideband Connector #1: JP51
10. MG9072 chip

SAS Ports

11. Upgrade Header: JP46
12. SAS Port #0
13. SAS Port #1
14. SAS Port #2
15. SAS Port #3
16. SAS Port #4
17. SAS Port #5
18. SAS Port #6
19. SAS Port #7

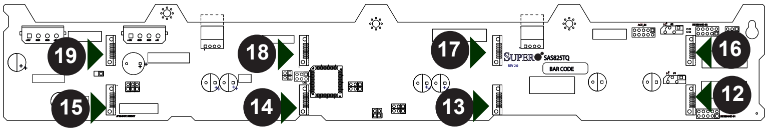

19
18
17
16
15
14
13
12
SUPERO SAS825TQ
REV 2.0
BAR CODE

Figure C-2: Front SAS Ports

C-6 Front Connector and Pin Definitions

#1 and #2 Backplane Main Power Connectors

The 4-pin connectors, designated JP10, and JP13 provide power to the backplane. See the table on the right for pin definitions.

Backplane Main Power 4-Pin Connector

Pin#	Definition
1	+12V
2 and 3	Ground
4	+5V

#3 and #4 CD-ROM Pin Connectors

Pin connectors designated J17 and J18, provide power to the CD-ROM drive. See the table on the right for pin definitions.

CD-ROM/FDD Power 4-Pin Connector

Pin#	Definition
1	+5V
2 and 3	Ground
4	+12V

#5 Activity LED Headers

The activity LED header, designated JP26 is used to indicate the activity status of each SAS drive. The activity LED header is located on the front panel. For the activity lead header to work properly, connect to it using a 10-pin LED cable. This is only used when the activity LED is not supported by the hard drive.

SAS Activity LED Header Pin Definitions

Pin #	Definition	Pin #	Definition
1	ACT IN#0	6	ACT IN#4
2	ACT IN#1	7	ACT IN#5
3	ACT IN#2	8	ACT IN#6
4	ACT IN#3	9	ACT IN#7
5	Ground	10	Empty

#6 and #7 I^{2}C Connectors

The I^{2}C Connectors, designated JP44 and JP45, are used to monitor the HDD activity and status. See the table on the right for pin definitions.

I^{2}C Connector Pin Definitions

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

#8 and #9 Sideband Headers

The sideband headers are designated JP51 and JP52. For SES-2 to work properly, you must connect an 8-pin sideband cable. See the table to the right for pin definitions.

Sideband Headers

Pin #	Definition	Pin #	Definition
2	SGPIO: SDIN; I²C: Backplane Addressing	1	Controller ID (SB6)
4	SGPIO: SDOUT; I²C: Reset	3	GND (SB2)
6	GND (SB3)	5	SGPIO: SLOAD; I²C: SDA
8	Backplane ID (SB7)	7	SGPIO: SCLOCK; 1²C: SCL
10	No Connection	9	No Connection

#10 MG9072 Chip

The MG9072 is an enclosure management chip that supports the SES-2 controller and SES-2 protocols.

#11 Upgrade Header

The upgrade header is designated JP46 and is used for manufacturing purposes only.

#12 to #19 SAS Ports

The SAS ports are used to connect the SAS drive cables. The 8 ports are designated #0 - #7. Each port is also compatible with SATA drives.

C-7 Front Jumper Locations and Pin Definitions

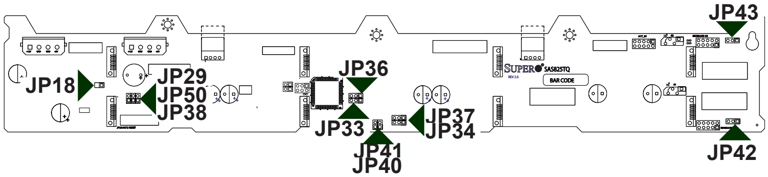
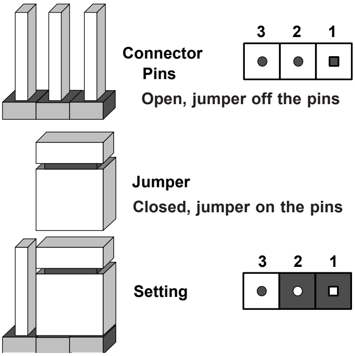

JP43
JP18
JP29
JP50
JP38
JP36
JP33
JP41
JP40
JP37
JP34
JP42

Figure C-3: Front Jumpers

Explanation of Jumpers

To modify the operation of the backplane, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. **Note:** On two pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.


3 2 1
Connector Pins
Open, jumper off the pins
Jumper
Closed, jumper on the pins
Setting
3 2 1

Jumper Settings		
Jumper	**Jumper Settings**	**Note**
JP29	Open (Jumper off the pins): Default Closed (Jumper on the pins): Reset	MG9072 chip reset
JP18	Open (Jumper off the pins): Default Closed (Jumper on the pins): Reset	Buzzer reset*

*The buzzer sound indicates that a condition requiring immediate attention has occurred.

The buzzer alarm is triggered by the following conditions:

1. Hard drive failure
2. System temperature over 45º Celsius.

SGPIO and I^{2}C Modes and Jumper Settings

This backplane can utilize SGPIO or I^{2}C. SGPIO is the default mode and can be used without making changes to your jumpers. The following information describes which jumper must be configured to use SGPIO mode.

SGPIO Settings (Default)

Jumper	Jumper Setting	Notes
JP33	2-3	Controller ID #1
JP34	1-2	Backplane ID #1 1-2: ID#0 2-3: ID#1
JP36	2-3	Controller ID #2
JP37	2-3	Backplane ID #2 1-2: ID#0 2-3: ID#1
JP38	Open (Jumper off pins)	I^{2}C Reset #2
JP40	Open (Jumper off pins)	I^{2}C Reset_SDOUT#1
JP41	Open (Jumper off pins)	I^{2}C Reset_SDOUT#2
JP42	2-3	I^{2}C Backplane ID_SDIN#1
JP43	2-3	I^{2}C Backplane ID_SDIN#2
JP50	Open (Jumper off pins)	I^{2}C Reset #1

Note: For SGPIO settings to work properly, use different backplane IDs for JP34 and JP37. When JP34 is set to 1-2 (ID#0), set JP37 to 2-3 (ID#1). Conversely, when JP34 is set to 2-3 (ID#1) set JP37 to 1-2 (ID#0)

I^{2}C Settings		
Jumper	Jumper Setting	Notes
JP33	2-3	Controller ID #1
JP34	1-2	Backplane ID #1 1-2: ID#0 2-3: ID#1
JP36	2-3	Controller ID #2
JP37	2-3	Backplane ID #2 1-2: ID#0 2-3: ID#1
JP38	Closed (Jumper on the pins)	I^{2}C Reset #2
JP40	Open (Jumper off the pins)	I^{2}C Reset_SDOUT#1
JP41	Open (Jumper off the pins)	I^{2}C Reset_SDOUT#2
JP42	2-3	I^{2}C Backplane ID_SDIN#1
JP43	2-3	I^{2}C Backplane ID_SDIN#2
JP50	Closed (Jumper on the pins)	I^{2}C Reset #1

SAS Port Connections in I^{2}C and SGPIO Settings

Use the following chart when connecting this backplane. If the SAS ports are connected out of order, it is not easy to identify drives using the LED function.

SAS Port Connections in I^{2}C and SGPIO Settings

Port #	I^{2}C	SGPIO
# 0 - 3	I^{2}C #1	Sideband #1
# 4 - 7	I^{2}C #2	Sideband #2

Front LED Indicators

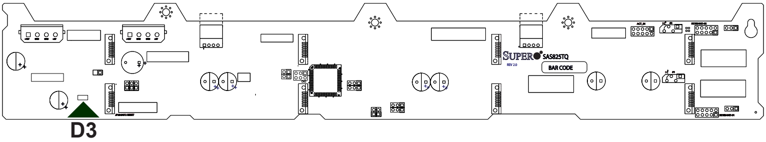


Figure C-4: Front LED

Front Panel LEDs

LED	State	Specification
D3	On	Overheat/drive failure LED indicator. (Red light flashing, buzzer on if activated)

C-8 Rear Connectors and LED Indicators

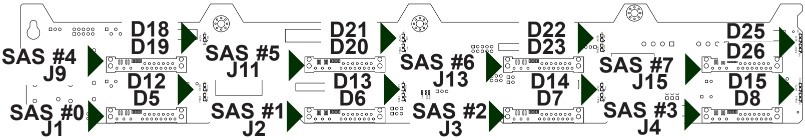

D18
D19
SAS #4
J9
D12
D5
SAS #0
J1
D21
D20
SAS #5
J11
D13
D6
SAS #1
J2
D22
D23
SAS #6
J13
D14
D7
SAS #2
J3
D25
D26
SAS #7
J15
D15
D8
SAS #3
J4

Figure C-5: Rear Connectors and LEDs

Rear SAS/SATA Connectors			
Rear Connector	**SAS Drive Number**	**Rear Connector**	**SAS Drive Number**
SAS #0 J1	SAS/SATA HDD #0	SAS #4 J9	SAS/SATA HDD #4
SAS #1 J2	SAS/SATA HDD #1	SAS #5 J11	SAS/SATA HDD #5
SAS #2 J3	SAS/SATA HDD #2	SAS #6 J13	SAS/SATA HDD #6
SAS #3 J4	SAS/SATA HDD #3	SAS #7 J15	SAS/SATA HDD #7

Rear LED Indicators		
Rear LED	**Hard Drive Activity**	**Failure LED**
SAS #0	D12	D5
SAS #1	D13	D6
SAS #2	D14	D7
SAS #3	D15	D8
SAS #4	D18	D19
SAS #5	D21	D20
SAS #6	D22	D23
SAS #7	D25	D26

Notes

Disclaimer (cont.)

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